

REMARKS

The present amendment is in response to the Office Action, dated April 7, 2003, where the Examiner has rejected claims 1-20. By the present amendment, claims 1, 9, 11 and 19 have been amended. Accordingly, claims 1-20 are pending in the application. Reconsideration and allowance of pending claims 1-20 in view of the amendments and the following remarks are respectfully requested.

A. Rejection of Claims 1-4, 8, 9, 11-14, 18 and 19 Under 35 USC §103

The Examiner has rejected claims 1-4, 8, 9, 11-14, 18 and 19 under 35 USC §103(a) as being unpatentable over Iketa et al. (USPN 5,786,738) ("Iketa '738"). Applicant respectfully disagrees; however, in order to expedite the prosecution of this application, applicant has amended independent claims 1 and 11 to replace the phrase "antenna element" with the term --antenna--. For the reasons that follow, applicant respectfully submits that claims 1-20 are patentably distinguishable over Iketa '738.

As amended, claims 1 and 11 specify a structure comprising a laminate substrate having a top surface for receiving a semiconductor die, an antenna situated on a bottom surface of the laminate substrate, the antenna being suitable for connection to the semiconductor die, and a laminate substrate reference pad in the laminate substrate, the laminate substrate reference pad situated over the antenna. Claim 1 further specifies at least one laminate substrate reference via situated at a side of the antenna, and claim 11 further specifies a plurality of laminate substrate reference vias, each of the plurality of laminate substrate reference vias situated at a side of the antenna. In this manner, both

the laminate substrate reference pad and the laminate substrate reference via(s) provide superior shielding for the antenna.

In contrast, Iketa '738 neither describes nor suggests such a structure. More specifically, applicant respectfully submits that Iketa '738 fails to disclose or suggest an antenna situated on a bottom surface of the laminate substrate as specified by claims 1 and 11. In the present Office Action, the Examiner identifies matching circuit pattern 68 (Figures 10, 11 and 14 of Iketa '738) as an "antenna element." However, matching circuit pattern 68 in Iketa '738 is not an antenna as specified by claims 1 and 11. Instead, matching circuit pattern lines such as matching circuit pattern 68 is used to establish a desirable line impedance (col. 2, lines 1-6, 15-29). As such, matching circuit pattern 68 is not an antenna as specified by claims 1 and 11, but is rather a circuit for providing phase matching and establishing the line impedance.

To further clarify, applicant refers to antenna terminals 66a, 66b, and 66c of Figures 10, 11 and 14, which are analogous to antenna terminals 36a, 36b, and 36c of Figure 3. As disclosed by Iketa '738, terminal 66a (like terminal 36a) is connected to a reception lead of an antenna, terminal 66b (like terminal 36b) is connected to a transmission lead of an antenna, and terminal 66c (like terminal 36c) is connected to a common lead of an antenna (col. 5, lines 37-49). Thus, matching circuit pattern 68 is not an antenna; rather, matching circuit pattern 68 is connected to an antenna which is situated exterior to structures 61 and 71. In sum, matching circuit pattern 68 is not an antenna situated on the bottom surface of structure 61 and 71, but is rather a circuit to provide phase matching and impedance matching for an exterior antenna. In amended

claims 1 and 11, the phrase “antenna element” has been replaced with the term --antenna-- to further clarify this distinction between an actual antenna and an phase matching circuit. For these reasons, applicant respectfully submits that independent claim 1, and its corresponding dependent claims 2-10, and independent claim 11, and its corresponding dependent claims 12-20 are patentably distinguishable over Iketa ‘738, and, therefore, claims 1-20 should now be allowed.

B. Rejection of Claims 5-7, 10, 15-17 and 20 Under 35 USC §103

The Examiner has further rejected dependent claims 5-7, 10, 15-17 and 20 under 35 USC §103(a) as being unpatentable over Iketa ‘738 in view of Houghton et al. (USPN 6,282,095) (“Houghton ‘095”). As discussed above, independent claims 1 and 11 are patentably distinguishable over Iketa ‘738, and, as such, claims 5-7 and 10 depending from independent claim 1, and claims 15-17 and 20 depending from independent claim 11 are, a fortiori, also patentably distinguishable over Iketa ‘738. Furthermore, the disclosure of Houghton ‘095 fails to cure the deficiencies of Iketa ‘738. Accordingly, claims 5-7, 10, 15-17 and 20 are patentably distinguishable over Iketa ‘738 in view of Houghton ‘095.


C. Conclusion

For all the foregoing reasons, an early allowance of claims 1-20 pending in the present application is respectfully requested.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attachment is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

Respectfully Submitted;
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 1, 9, 11 and 19 have been amended as follows:

1. (Once Amended) A structure comprising:

a laminate substrate having a top surface for receiving a semiconductor die;

an antenna ~~element~~ situated on a bottom surface of said laminate substrate, said antenna ~~element~~ being suitable for connection to said semiconductor die;

a laminate substrate reference pad in said laminate substrate, said laminate substrate reference pad situated over said antenna ~~element~~;

at least one laminate substrate reference via situated at a side of said antenna ~~element~~.

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9. (Once Amended) The structure of claim 1 wherein a shape of said antenna ~~element~~ is selected from the group consisting of a square shape, a rectangular shape, a slot line pattern, a meander line pattern, and a patch pattern.

11. (Once Amended) A structure comprising:

a laminate substrate having a top surface for receiving a semiconductor die;

an antenna ~~element~~ situated on a bottom surface of said laminate substrate, said antenna ~~element~~ being suitable for connection to said semiconductor die;

a laminate substrate reference pad in said laminate substrate, said laminate substrate reference pad situated over said antenna ~~element~~;

a plurality of laminate substrate reference vias, each of said plurality of laminate substrate reference vias situated at a side of said antenna ~~element~~.

19. (Once Amended) The structure of claim 11 wherein a shape of said antenna ~~element~~ is selected from the group consisting of a square shape, a rectangular shape, a slot line pattern, a meander line pattern, and a patch pattern.